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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,687	09/16/2005	Benjamin Hodder	05-738	9577

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EXAMINER	
DIACOU, ARI M	
ART UNIT	**PAPER NUMBER**
3663	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/549,687	HODDER ET AL.	
	Examiner	Art Unit	
	Ari M. Diacou	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Regarding claims 1-18, the preambles call the invention and optical fiber, yet the limitations say that the optical fiber comprises a laser. The examiner suggests that the limitation be changed to "at least one fibre lasing volume". While there do exist fibers that do comprise active materials and electrical conduits. There exists no canonical definition of optical fiber that includes the power supply necessary for an optical fiber to comprise a laser.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Carter et al. (USP No. 2002/0191928).Carter discloses an optical fibre comprising

- a first fibre core, the core being doped and having at least one fibre laser, [32/132]
- the at least one laser comprising a pair of reflection gratings embedded in the first fibre core to form a lasing volume and [¶ 0058]
- a second undoped fibre core separated from the first fibre core by cladding material of the optical fibre [40/140]
- wherein the second fibre core is optically coupled to the lasing volume of each of the at least one fibre laser in the first fibre core such that in use pump light from a pump source can propagate down the second fibre core and be coupled into the at least one fibre laser. [¶ 0036]

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7: This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garman (USP No. 4955685) in view of Ball (USP No. 5666372), Chang (USP No. 6560247) or Bufetov (USP No. 6625180). Garman discloses

- a first fibre core, the core being doped and having at least one fibre laser, [32/132]
- a second undoped fibre core separated from the first fibre core by cladding material of the optical fibre [40/140]
- wherein the second fibre core is optically coupled to the lasing volume of each of the at least one fibre laser in the first fibre core such that in use pump light from a pump source can propagate down the second fibre core and be coupled into the at least one fibre laser. [¶ 0036]

but fails to disclose:

- the at least one laser comprising a pair of reflection gratings embedded in the first fibre core to form a lasing volume

The fiber laser art (372/3) is replete with ways to use Bragg gratings in order to create a laser cavity. Ball, Chang and Bufetov each teach a different topology for making a multi-peak laser, by setting up different laser cavities within a fiber using Bragg gratings. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to add a Bragg grating to an amplifying fiber, for the advantage of creating a fiber laser.

9. Claims 3, 4, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garman and others as applied to claims 1 and 2 above, and further in view of Ishikawa (USP No. 2003/0021533). Garman and others disclose the invention with all the limitations of claims 1 and 3, but fail to disclose using Bragg gratings on one core to facilitate coupling to the other core. Ishikawa teaches just that [¶ 0004] [¶ 0033] [¶ 0042]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to modify a dual core fiber by adding a Bragg grating in for the advantage of facilitating coupling between the cores.

10. Claims 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garman and others as applied to claims 1-4 above, and further in view of Ouelette (NPL). Garman, and others discloses the invention with all the limitations of claim 2, but fails to disclose additional Bragg gratings. Oulette teaches that Bragg gratings are

layers of differently indexed dielectrics, and that the more layers, the greater the reflection. [pg. 38] Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to add additional Bragg gratings, for the advantage of higher reflection.

11. Claim 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garman and others in view of Ouelette as applied to claims 1-5 above, and further in view of Ishikawa (USP No. 2003/0021533). Garman and others disclose the invention with all the limitations of claim 5, but fail to disclose using Bragg gratings on one core to facilitate coupling to the other core. Ishikawa teaches just that [¶ 0004] [¶ 0033] [¶ 0042]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to modify a dual core fiber by adding a Bragg grating in for the advantage of facilitating coupling between the cores.

12. Claim 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garman and others as applied to claim 1 and 2 above, and further in view of Birks (USP No. 2004/0028356). Garman and others disclose the invention with all the limitations of claim 1, but fail to disclose tapering the fiber. Birks teaches tapering an optical fiber to limit the transmitted modes [Fig. 1] [Abstract]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to taper and optical fiber for the advantage of limiting the optical modes that are transmitted.

13. Claims 11, 12, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garman and others as applied to claims 1 and 2 above, and further in view of Harres (USP No. 2004/0071438). Garman and others disclose the invention with all the limitations of claims 1 and 2, but fail to disclose using the fiber laser in a sensor system. Harres teaches a sensor system that tests how much the alignment of any two fiber used in a transmission system changes the transmission characteristics. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to use the device of Harres to test the coupling of the fibers of Garman and others, for the advantage of seeing if it works.

14. Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garman and others as applied to claims 1 and 2 above, and further in view of Hiroshi (USP No. 2003/0095767). Garman and others disclose the invention with all the limitations of claims 1 and 2, but fail to disclose a third core. Hiroshi teaches what is well-known in the art) that a three core fiber is good for controlling the dispersion in the fiber [Abstract]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to make a 3 core fiber with the charactersistics of Garman and others, for the advantage of a fiber laser that was dispersion optimized.

Conclusion

15. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

16. The references made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

17. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 12/15/2006

JACK KEITH
SUPERVISORY PATENT EXAMINER